ABSTRACT

The invention provides an improved method and device for inspecting heat exchanger tubes from within the tube inside diameter that overcomes the shortcomings of the prior art. It adapts a guided-wave probe approach that makes use of a torsional wave mode instead of a longitudinal wave node disclosed in the prior art. The torsional wave mode has many advantages over the longitudinal wave mode for detecting defects. When energized by suitable instrumentation, the probe is caused to generate a torsional mode signal that is transmitted to the heat exchanger tube from the waveguide tube. When reflected signals from defects in the heat exchanger tube walls are returned to the inspection opening end of the heat exchanger tube, the reflected defect signals are transmitted to the probe waveguide tube for amplification, detection and characterization of the reflected signal.